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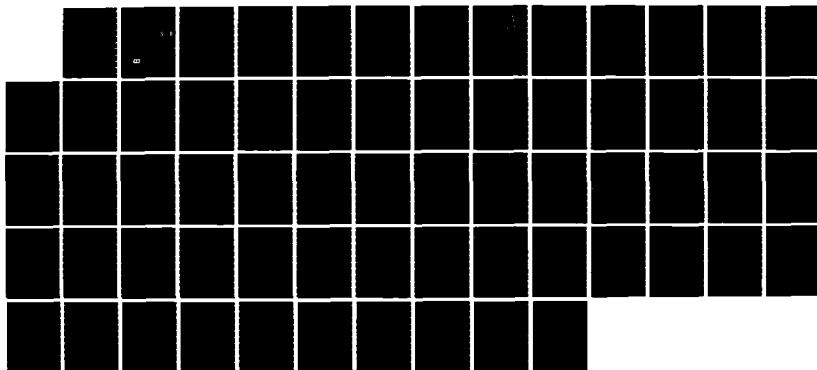
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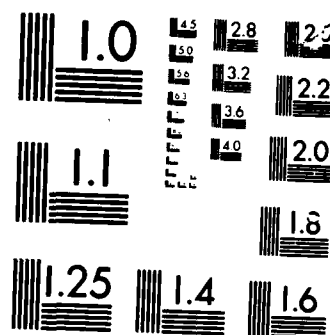
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POL PIER REPAIRS  
LAJES FIELD, AZORES

CONSTRUCTION INSPECTION VISIT NO. 2  
JULY 1980

CONTRACT NO. N-62477-79-C-0021  
MODIFICATION P-00001

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DEPARTMENT OF THE NAVY  
NAVAL FACILITIES ENGINEERING COMMAND  
CHESAPEAKE DIVISION  
WASHINGTON, D. C.

BY

 **OLKO ENGINEERING**  
CONSULTANTS • DESIGNERS

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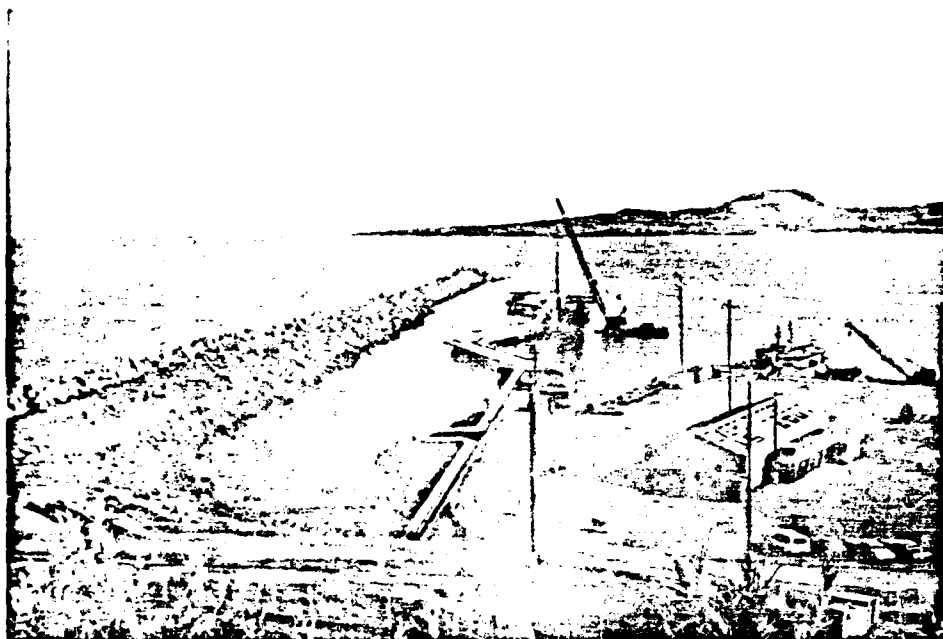
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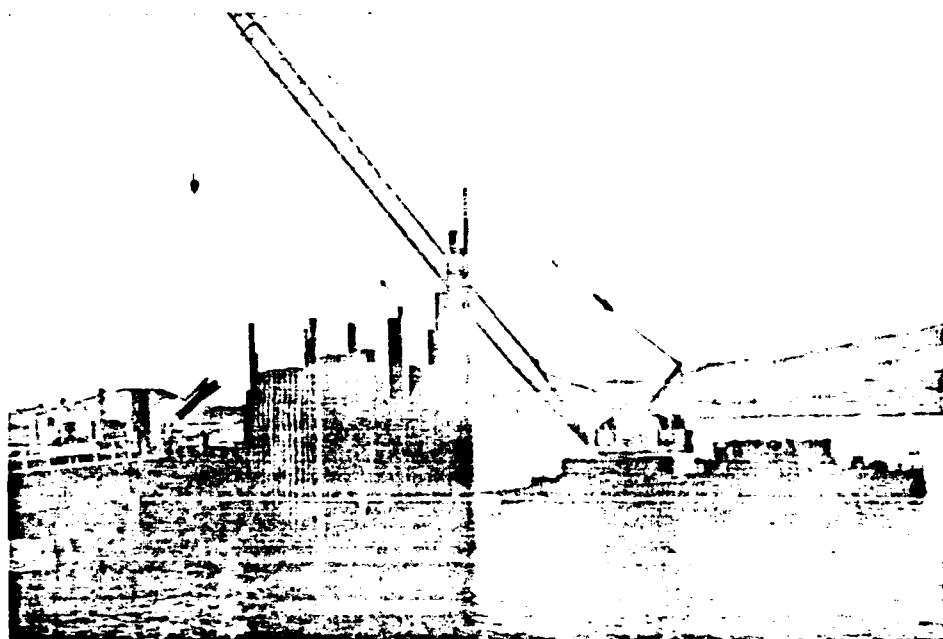
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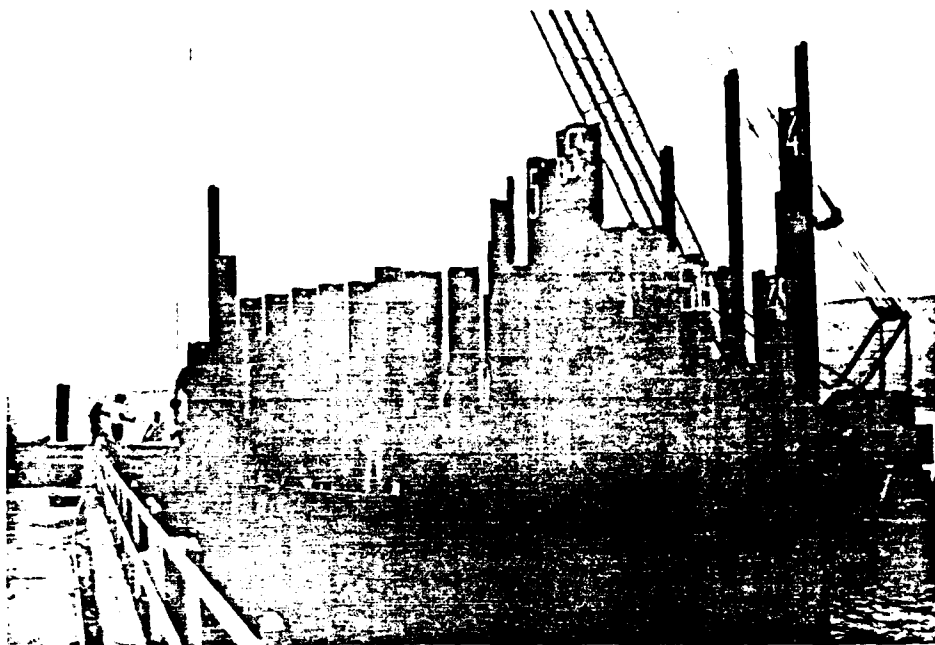


POL PIER - OVERALL VIEW  
Barge Crane at New North Dolphin

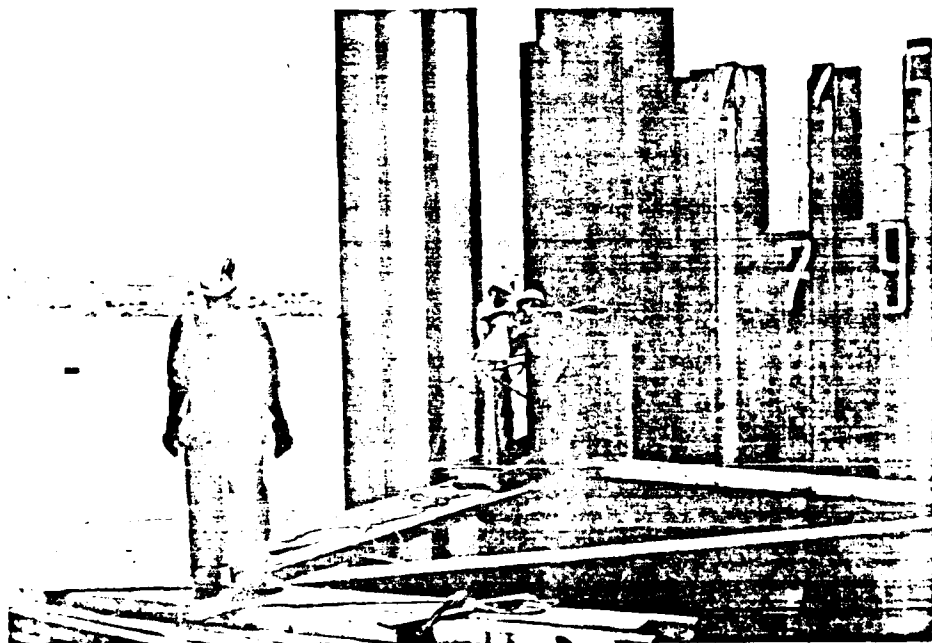


NEW NORTH DOLPHIN  
Threading the West Wall and Driving at the Other  
Three Walls to Level the Sheet Piles

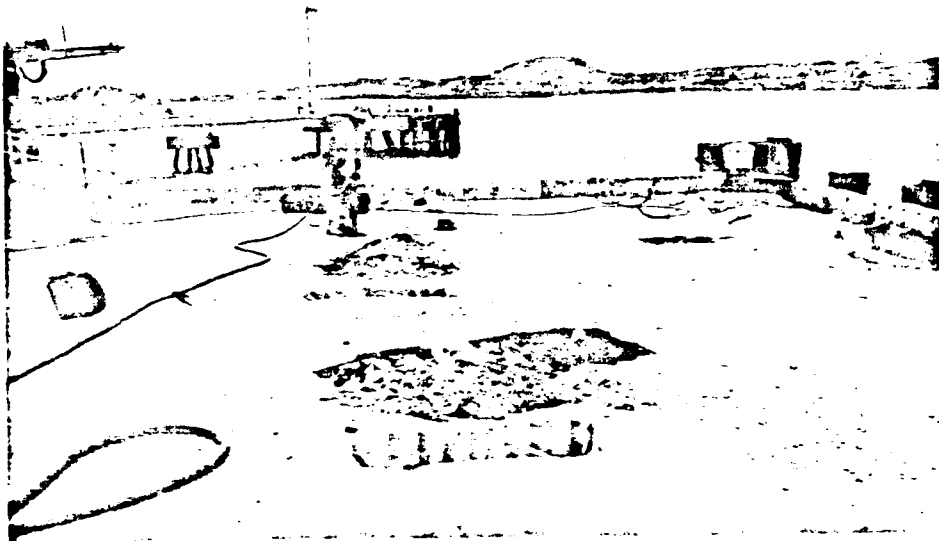




NEW NORTH DOLPHIN  
Epoxy Paint Touch Up of Abraded Sheet Piles.

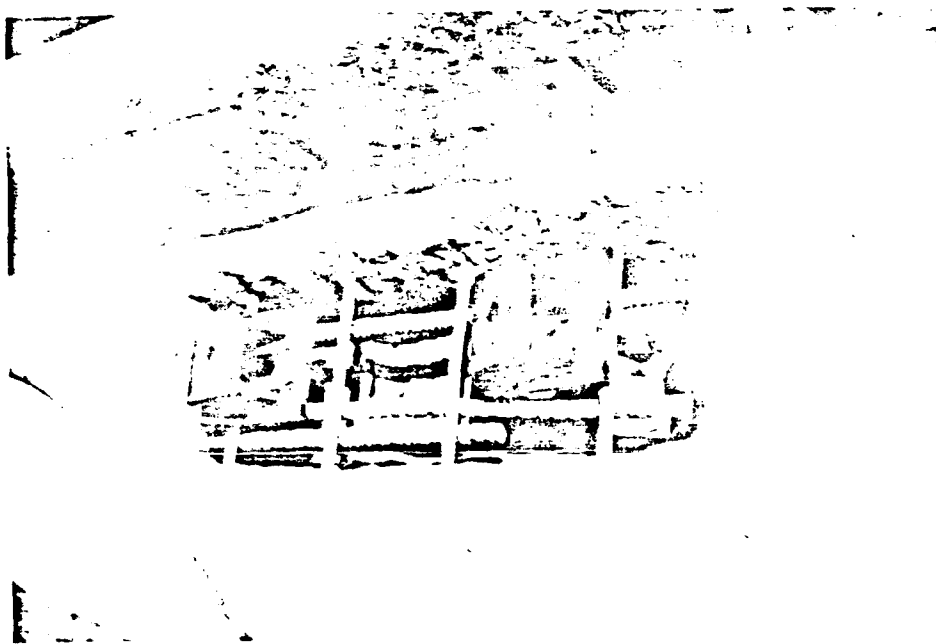


NEW NORTH DOLPHIN  
Threading Sheets at the North End of the West Wall.  
The Other Three Walls Have Been Partially Driven.



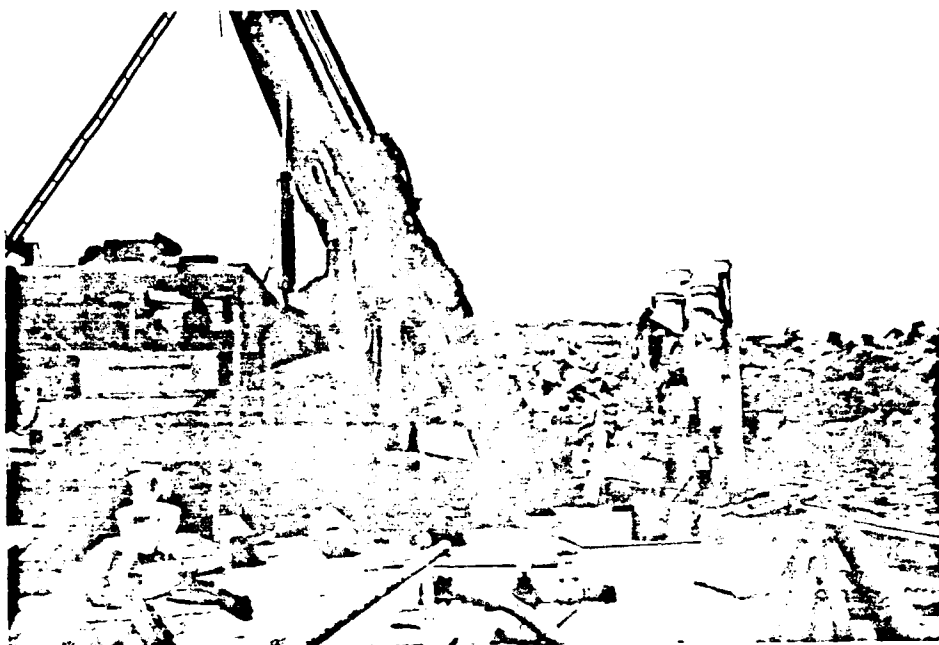
#### LOADING PLATFORM

Openings in Deck for Batter Pile Tie Downs, at South End of Loading Platform.

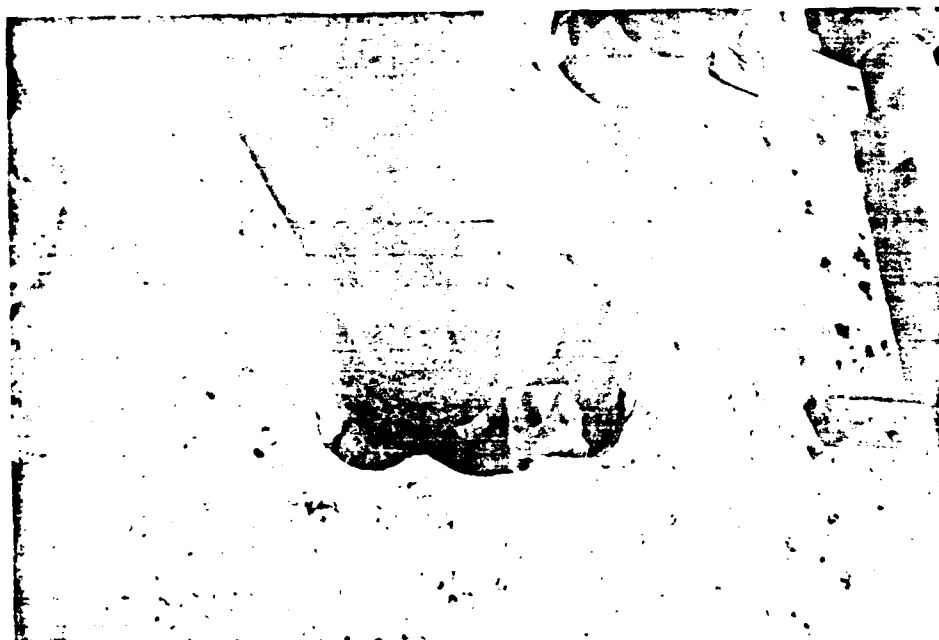


#### LOADING PLATFORM

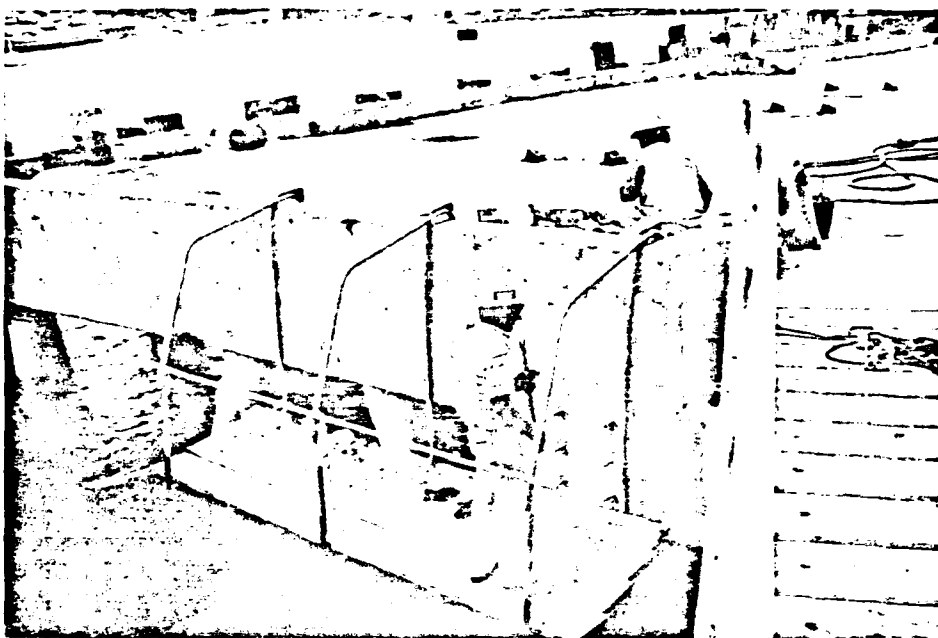
Angle Plates, for Batter Pile Tie Down, to be Placed Beneath Reinforcement.



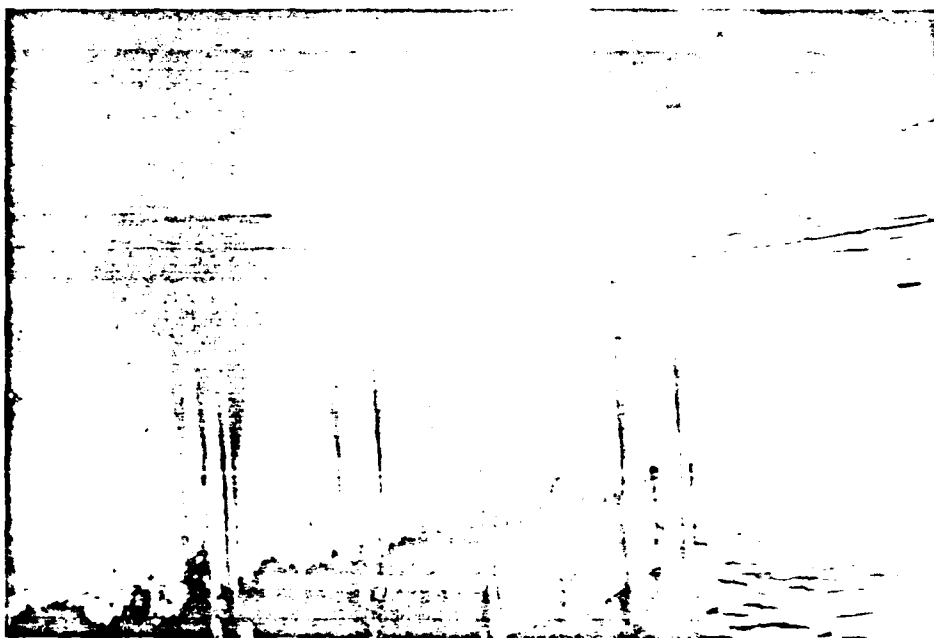
DOLPHIN NO. 3 - ROCK ANCHORAGE  
Driving 10 Inch Casing for North Rock Anchorage.



DOLPHIN NO. 3 - ROCK ANCHORAGE  
Concrete Cap Opening Made by Drilling a Series of  
Rotary Bit Holes.



LOADING PLATFORM - SOUTH END  
Installing Bolts to Tie-In the Template for the New  
South Dolphin.



DOLPHIN NO. 1 - APPROACHWAY  
Corrosion of Top of Sheet Pile Cell. Spalling of  
Concrete Deck Slab.

POL PIER REPAIRS  
LAJES FIELD, AZORES

CONSTRUCTION INSPECTION VISIT NO. 2

JULY 1980

CONTRACT NO. N-62477-79-C-0021

MODIFICATION P-00001

S. M. Olko arrived at Lajes Field, Azores, on Monday, July 21, 1980 and inspected construction progress of repairs to the POL Pier, leaving Lajes Field on Sunday, July 27, 1980. This was the second Construction Inspection Visit.

PERSONNEL

The following military and contractors personnel were met during the site visit:

Lt. Col. David Brooks	- Base Civil Engineers
Mr. Thomas Hayes	- Base Civil Engineers
Lt. H. L. Rivero	- Base Civil Engineers
Capt. Richard T. Weeks	- U. S. Army Corps of Engineers Construction Inspection
Col. Nelson Maier	- Army Transportation Terminal Unit
Maj. Peter Ferguson	- Army Transportation Terminal Unit
Col. Barry M. Lambert	- Base Administration
Maj. Jardine	- Fuels & Tank Facilities
Sgt. Collins	- Contract Administration
Lt. Cmdr. Thomas Rainey	- U. S. Navy Representative

(Continued)

Dr. Shun Ling	- NAVFAC, Chesapeake Division
Dr. Chingmiin Chern	- NAVFAC, Chesapeake Division
Mr. Boysen Petersen	- DANAC, Inc. - General Manager
Mr. Ole H. Sorensen	- DANAC, Inc. - Construction Supt.
Mr. Earl W. Dennison	- New Jersey Drilling Company

#### GENERAL WORK PROGRESS

Previously, Site Visit No. 1 was made during April 16-18, 1980. At that time, DANAC, Inc. (General Contractor) was still organizing the work, drilling a rock anchor and the 100 day Pier shutdown period had not yet commenced.

However, during this second site visit of July 1980, the major work was in progress and the 100-day Pier shutdown period had commenced on June 11, 1980 (later changed to June 17, 1980) and is to end on Friday, September 19, 1980. However, due to the alleged unavailability of the Army crane, the 100 day period has been extended an additional week to Thursday, September 25, 1980. All work is to be completed by Tuesday October 7, 1980.

In general, the work accomplished by DANAC, Inc. (General Contractor) up to and during the July 1980 (Second Site Visit) consisted of the following:

1. Dolphin No. 2 - Installed all pipe casings and coring into bedrock, for the three rock anchorages.
2. Dolphin No. 3 - Installed pipe casings and coring into bedrock for the center and south rock anchorages. At the north rock anchorage, the 8-inch pipe casing was down 83 feet below the top of deck, measured on a batter and it was being driven with the MKT No. 6 hammer to bedrock, which is about 130 feet below the concrete cap.

3. North Dolphin Cell - Driving was in progress on the north, east and south walls of the dolphin, which required about 10, 8 and 12 feet, respectively, of additional driving to reach design elevation. Whereas, on the west wall, sheets were being threaded along about 60 percent of the north side and 40 percent of the south side. The west wall had been partially driven, requiring an additional 10 feet to reach design elevation.
4. Pile Tiedown - At the south end of the Loading Platform, the concrete deck had been chipped out and holes drilled through the concrete pile cap for future installation of tiedowns for the west batter piles, for the four southernmost bents, Nos. 13 to 16.
5. Approachway Spalled Concrete - The underside spalled areas at the north end of Span No. 1 had been repaired. Span No. 3, at the north end, had also been repaired. However, additional spalled areas have developed since the original inspections of January 1979 and these areas will have to be repaired.

The Contractor has on hand all major equipment and supplies.

#### GENERAL TIME SCHEDULE

The original time schedule prepared by DANAC, Inc., is now meaningless, in terms of work sequence and completion dates of individual elements of work. Everything has changed. The Contractor will have to prepare a revised schedule that realistically shows the status of work and projections into the future.

The Contractor is of the opinion that they would be on schedule, if it were not for the late start, caused by equipment and supplies, not arriving on schedule from Bayonne, New Jersey, via Government transport. This is a matter to be resolved in the future but the facts are that apparently some items

were not delivered (by DANAC) in time to Bayonne for shipment, and when for example, the crane arrived at Lajes, the Contractor was not ready to receive it. Altogether, within the 100-day Pier shutdown period, about 3 weeks have been lost, based on problems with the barge, crane, sheet pile templates, plus the fact that the Army TTU placed a limitation on the crane lift.

The official completion date for the entire project is October 7, 1980 after which liquidated damages could be charged at the rate of \$115 a day. This amount, unfortunately, is quite nominal and does not compel the Contractor to make extra effort, such as doubling up on equipment, to complete the job within the scheduled dates.

A discussion was held with the Contractor regarding the projected status of work, at the end of the 100-day shutdown period. They estimated the following status on September 19, 1980:

1. North Dolphin - All sheeting driven, cell filled with crushed stone, Seacushion fender system in front, but no concrete cap.
2. Loading Platform Fendering - Completely installed with Seacushion fenders.
3. South Dolphin - Sheet piling driven to about 50 percent penetration. Not filled. No fendering system. No concrete cap.
4. Tiedowns - All tiedowns completed on the 10 west batter piles.
5. Loading Platform Cracked Deck Slab - All epoxy grouting completed.



6. Rock Anchors - All rock anchors completed.
7. Approachway Spalled Concrete - All repaired and patched.
8. Electrical work - None.
9. Cathodic Protection - None.

The Contractor is of the opinion that the entire project will be completed about 3 weeks after the October 7, 1980 scheduled date. However, this does not realistically take into account future delays with ship berthings, bad weather, and the fact that the concrete caps on the cells will have to be cast between berthings, allowing sufficient time for the concrete to develop strength. Consequently, considering all of these factors, a more realistic schedule is completion in mid-January 1981.

The controlling operation is the driving of sheet piles. The Contractor has only one hammer and one crane for this operation. Consequently, discussions were held regarding speeding up this aspect of the work by importing another hammer and crane. The Contractor stated, however, that the only other crane on the island suitable for the work, was involved on other jobs. The TTU cranes have too short a boom and to attempt to bring in a new crane, at this late date, would be impossible within the time available. These discussions then led to alternative combinations of building out over the dolphin cells, so the TTU crane could reach as well as splicing sheet piles in place, etc., but no particular progress was made along these lines.

These discussions, concerning speeding up the job, also covered the possibility of working double shifts. However, the Contractor stated that this would not be efficient because of the down time needed for repairs and maintenance. Also, there is the factor that pile driving is noisy and complaints are increasing from people in the town. A 24-hour schedule would probably be unacceptable.

It is apparent that plans have to be made that realistically assume that at the conclusion of the 100-day Pier shutdown period, the sheet pile driving will not be finished, nor will the entire project be completed by the October 7, 1980 scheduled date. Accordingly, the Contractor should concentrate on completing that which has already been started, so as to be in a condition to receive ships after the 100-day shutdown period, without endangering the ships, or the partially completed construction. Also, the remaining work scheduled after October 7, 1980 will require close coordination with future shipping.

#### EXTENSION OF 100-DAY SHUTDOWN PERIOD

Discussions were held with Base personnel concerning the possibility of extending the 100-day Pier shutdown period so the Contractor could complete the South Dolphin.

The Contractor indicated that an additional 3 weeks (beyond September 19, 1980) would be needed. However, this is optimistic and more probably, about 5 weeks will be needed. In any event, it develops that such an extension of time (even 3 weeks) can not be granted because of the depletion of the fuel

supply on the island. The ships must come in and build up the fuel reserves. In addition, with colder weather, fuel will be required for heating purposes.

In particular, the diesel fuel supply is very low. It is needed for both the power plant and the Island needs.

The Air Force studied this matter in detail, even counting the fuel stored in the pipeline itself, but much of this fuel can not be retrieved because of elevation differences and limited pumping capacity.

It was learned that the Air Force could have given the Contractor more than 100 days, but since the original schedule was for the 100-day period to start in May 1980, the decrease in fuel supply was based on that date, rather than the fact that because of delays, the Contractor officially started the 100 day period on June 11, 1980. In hindsight, more time could have been given if it had been known in advance that the 100 days were to start later.

#### TIME DELAYS BY GOVERNMENT

During the course of conversations, the Contractor, at various times, mentioned alleged delays caused by the Government - in addition to the basic contention that equipment and material arrived late from Bayonne, New Jersey.

The Contractor stated that there had been considerable breakdowns of the cranes provided by the Government. The

problem seemed to be lack of spare parts and limited maintenance. This also included the two new cranes, that were recently put into service.

Another complaint by the Contractor was that fueling of the cranes was being accomplished during normal working hours; whereas, the Contractor fuels during offhours, as advance preparation for the work.

The Contractor also stated there were frequent electric outages.

It must be pointed out, however, that with respect to the Contractor's comments regarding the Government cranes, the Specifications stated that the Army would provide DANAC with one crane for use onshore for stacking of materials, etc. Actually, 2 cranes were assigned to this work. Accordingly, some of the alleged time delays are more than compensated for by the doubling of Government equipment.

#### WORKING HOURS

The full work day is from 7 in the morning until 10 o'clock at night, with 2 hours off for lunch and dinner, or basically a 13 hour work day.

The Contractor stated that if they were to work 24 hours, there would be little extra production, based on past experience. There was very little output from the night

shift, because of the poor lighting and difficult working conditions.

The 13 hour day is worked Monday to Saturday, but on Sunday, they work only up to 1 P.M., a half day.

#### FUTURE WORK SEQUENCE

The future work sequence proposed by the Contractor, is generally as follows:

1. Drive the sheeting of the North Dolphin.
2. Drive the fender sheeting for the Loading Platform at the north end.
3. Install the template for the South Dolphin.
4. Install the tie rod and wale system at the North Dolphin.
5. Set some sheets and connections between the template and Loading Platform, for the South Dolphin.
6. Drive the south fender sheets of the Loading Platform.
7. Drive the South Dolphin sheet piles.
8. Complete all other remaining work.

The North Dolphin will be filled as soon as the wales and tie roads are installed. Then, after filling, the concrete cap will be placed, allowing 14 days curing time before berthing of a vessel.

The Contractor stated that it will take about 1-1/2 to 2 months to drill and install the 6 rock anchorages at Dolphin No. 4. The reason for this long time is that considerable shifting of drilling equipment is required.

Completion of the tie downs, at the Loading Platform, is scheduled for the week of July 28 to August 1, 1980.

The Contractor stated that epoxy grouting of the cracked southerly portions of the Loading Platform slab, will commence around August 25, 1980. This work has to be done in advance of any ship berthings, to allow sufficient curing time.

#### WEATHER DELAYS

The Contractor stated that the weather had been abnormal this year, with the rainy season extending up to June. This particularly affected welding and fabrication of the steel barge, and the soldier beams and sheet piling. Such work was delayed by the rain, because of lack of shelter.

Supposedly, the local newspaper statistics show a record rainfall for this past spring. The Contractor indicated that this was a partial factor for some of the delays.

#### CONTRACTOR'S WORK FORCE

Altogether, the Contractor has 28 people on the job and they expected 2 more the following week, making a total of 30 people.

The additional two personnel will be a blacksmith and a welder.

Personnel are not a serious problem for DANAC, since they have other projects on the island and to some extent, they can shift personnel around. The main problem related to

Their work delay is the simple fact that there is only one pile driver, and only one long boom crane capable of handling the hammer and sheeting.

#### PRESENT MATERIALS AND EQUIPMENT

The following is a general summary of materials and equipment on hand, at Lajes Field, used by DANAC, Inc.

All major materials and equipment are at the job site. This includes all of the steel, such as sheet piling, walers, tie rods, reinforcing steel, etc.

The major equipment consists basically of the steel barge, the 60 ton DANAC crane, the two drilling rigs from the New Jersey Drilling Company, and a forklift truck. Other major equipment such as cranes, etc., are borrowed from the Army. In addition, there are many small tools and other usual items.

The steel barge, fabricated by the Contractor, is 40 by 60 feet in area; 6 ft. 6 inches high, made up of steel trusses with 1/4 inch thick plate. It is afloat and supports the Contractor's crane.

The Contractor brought to the Azores a new "American 60 ton crane." It has a 130 ft. high tower. It is mounted on the steel barge and is presently used for handling and driving steel sheet piles at the North Dolphin - plus moving the drilling rig for the rock anchorages.

The pile driver, used on the sheet piles, is a Vulcan 50-C hammer. It is rated at 15,100 ft.-lb. of energy. It is an open, differential hammer operating at 120 blows per minute. The drop weight itself weighs 5,000 lb.; whereas, the total weight of the hammer, including the drop weight, is 11,782 lb. The compressed air pressure is 120 psi.

New Jersey Drilling Company, as Subcontractors to DANAC, Inc. have 2 drilling rigs on the job, a large one and a small one. The large rig is the only one that has operated to date, at Dolphins Nos. 2 and 3. It will later be transferred to Dolphin No. 4, for drilling of the rock anchors, where it will be joined by the smaller drilling rig, both operating on top of Dolphin No. 4, to drill 6 rock anchors.

New Jersey Drilling Company is presently driving the casings, for the rock anchors with a small pile driver hammer MKT-6. It is a double-acting closed hammer, rated at 2,500 ft.-lb. of energy with a hammer weight of 400 lb. The total weight of hammer and parts is 2,900 lb. It operates at 275 blows per minute with 100 psi compressed air.

DANAC has on the job site about 80 percent of the crushed stone needed to fill the new North and South Dolphin cells.

The Contractor is using an Army crane, mounted on an LCM-8, for handling some of the materials and particularly to service the rock anchor drillings at Dolphin No. 3 and later,



at Dolphin No. 4. Army TTU, however, has imposed a limit of 7,500 lb. lifting capacity for this crane. The Contractor has protested this limit as it is now necessary to use the 60 ton barge-mounted crane for heavy lifts. This interrupts the work sequence and does not take advantage of the rated capacity of the Army crane, or the LCM. Apparently, TTU stipulated this restriction as the crane has a history of clutch slippage. They were also concerned about the stability of the LCM, with eccentric and moving crane loadings.

#### MISSING MATERIALS AND EQUIPMENT

The following is a general summary of materials and equipment which are not yet available at the job site:

About 20 percent additional crushed stone is still required, to fill the new North and South Dolphins. This is not anticipated to be a procurement problem.

In general, all materials and equipment are on the job site, except for some minor items, which, nevertheless, cause some delay and concerns. For example, a special concrete saw had been ordered from the U. S. A. several months ago, but has not yet arrived. DANAC considers it essential for some of the concrete repair work. They are following up on this shipment order.

Oxygen is another problem. It is required for the torches for cutting (burning) of sheet piles. The oxygen has to be imported from another island and delivery has

been slow. In addition, special adapters are required because the torches are American made, but the tanks are Portuguese design. This problem is being worked out.

#### STEEL BARGE

The Contractor had, since the last site visit in April 1980, completely prefabricated and launched the steel barge, which is 40 by 60 ft. in area; 6 ft. 6 in. high, made up of steel trusses and 1/4 inch thick plate.

The barge is now afloat and supports the 60 ton crane. It functions very well, with uniform draft and easily accommodates different boom angles and lifts on the crane.

During the visit, on Wednesday, July 23, 1980, the waters were very rough due to extremely high winds. But, the barge and crane rode out the short, choppy waves very well with relatively little motion, considering the conditions.

It is understood that when the barge was launched, an interior inspection was made to see if there were any leaks, due to poor welding. There were no leaks. The barge is tight and dry.

The only major problem associated with the barge is the fact that it was not fabricated on time, to receive the 60 ton crane, when it arrived in the harbor by ship from the U. S. A. This caused a problem, at that time, and the crane

had to be temporarily placed in an LCM and then, about a week later another ship, arriving in the harbor, lifted the crane from the LCM onto the completed DANAC barge.

DANAC has claimed that the barge was not completed on time, because steel plate was not delivered on schedule to Lajes, from Bayonne, New Jersey. Also, bad weather prevented welding. In response, it is understood that the plate was NOT delivered to Bayonne on time by DANAC to be placed on the ship, and that DANAC received plate which was improperly cut. Furthermore, DANAC put shelter over the welding, at a later date. All of this will be a matter for future discussions, if a claim is made by the Contractor.

#### ROCK ANCHORAGES

Rock anchorages are to be installed at existing Dolphins Nos. 2, 3 and 4 to resist added loads from the future larger vessels. The basic design consists of jackhammering and opening up the dolphin concrete cap, installing a 10 inch steel pipe into the harbor bottom, then an 8 inch pipe is telescoped through the 10 inch to bedrock, cleaned out with an 8 inch bit, followed by coring a 6 inch hole into bedrock, for the reinforcing steel anchorage, which will extend from the grouted hole in the bedrock up to the top of the pile cap.

Three such anchorages are required at Dolphin No. 2. Also, three anchorages at No. 3 but six anchorages are to be installed at Dolphin No. 4. Altogether, a total of 12 anchorages are needed.

The situation during the site visit was that all 3 anchorages had been drilled into bedrock at Dolphin No. 2 by the New Jersey Drilling Co. Whereas, only the South and Center Anchorages of Dolphin No. 3 had been drilled, and they were still working on the North Anchorage of Dolphin No. 3. No work had been accomplished yet, at Dolphin No. 4. None of the anchorages have reinforcing steel or grout. The status of work, at present, is that only some of the casing installation and drilling have been completed.

During the first site visit of April 1980, the drilling of the Center anchorage at Dolphin No. 2 was observed. There were no difficulties in accomplishing that work and the 10 in. and 8 in. casings were driven, using the rotary percussion drill bit as a pile hammer. However, after leaving the site in April, difficulties were experienced with the second rock anchorage, at Dolphin No. 2, on the south side, where unsuccessful attempts were made to go past boulder obstructions. Finally, a new 10 in. drilling bit was brought onto the job and the casings were driven with a pile hammer, under the direction of a new foreman from New Jersey Drilling Co.

The Contractor now has on the job 3 percussion drilling bits of 6 in., 8 in. and 10 in. diameter. Originally, he came onto the job equipped only with the 6 and 8 in. diameter bits.

The delays incurred as a result of encountering the boulders at the South anchorage of Dolphin No. 2 have re-

sulted in a claim by the Contractor, for extra work, which is the subject of a separate section of this report.

In general, since the first site visit of April 1980 there are three basic changes in the work method adopted by the Contractor. The first is that the opening in the concrete cap is made by drilling a series of holes with the percussion rotary bit, rather than jackhammering out the opening. The second change is that the Contractor is using an MKT-6 Pile Driver of 2,500 ft.-lbs. of energy to drive the casings, rather than the percussion rotary bit itself. The third change is that the Contractor is drilling into the bedrock with the 8 in. clean out bit, rather than changing over to the smaller diameter 6 in. bit.

With respect to use of the rotary bit to drill the opening in the concrete cap, this results in smooth sides which will later have to be roughened and belled out for proper bond and shear development. Also, additional side chipping is needed to expose sufficient reinforcement for butt weld splicing. This was told to the job personnel.

With respect to driving with a hammer, rather than using the percussion drilling bit as a hammer - probably, this should have been done from the outset. Supposedly, the hammer was on the job. It would have resulted in faster production, but it doubtful that it would have overcome the boulder obstructions.

With respect to drilling into bedrock using the 8 inch bit (rather than 6 inch), this is considered an improvement in that it will develop more bond, and ensure better grout filling around the reinforcing steel cage.

To summarize the differences and somewhat confusing problems that arose with the individual anchorages, each will now be discussed separately. They are discussed in their sequence of installation.

Dolphin No. 2 - Center Anchorage: This is the First Anchorage installed and the one observed during the first visit in April 1980. The 10 inch casing went to its designed depth, followed by the 8 inch casing to bedrock, with a 6 inch diameter core drilled into bedrock for 15 feet. The depth to bedrock measured from the top of the concrete cap, along the sloped alignment of the casings, is 117 feet. No particular obstructions were encountered with this first anchorage, although there is a report of an initial obstruction, about 10 feet below the harbor bottom, but New Jersey Drilling Co. shifted the casing five feet closer to the dolphin, then "nicked" the obstruction and went down to design elevations. Both the 10 inch and the 8 inch casings were driven by using the percussion rotary bit as a pile driver, striking a steel cap on top of the pipe casings. This anchorage was installed by Mr. Bennetto of New Jersey Drilling Co.

Dolphin No. 2 - South Anchorage: The problems with boulder obstructions commenced with this rock anchor. New Jersey Drilling Co. (Mr. Bennetto) attempted five times to bypass boulder obstructions and was not able to get through. The job was stopped. Mr. Dennison took over as foreman. A 10 inch rotary bit was brought from the U. S. A. onto the job, which drilled five feet in the boulder layer, and then the 8 inch casing went all the way down to bedrock, using the MKT Pile Hammer as the driver. Accordingly, in this rock anchorage the 10 inch casing is not down to design elevation, but "hungup" at a higher elevation, on top of the boulder. The exact diameter of the boulder is not known. The Subcontractor arbitrarily drilled five feet. The coring into bedrock is 6 inch diameter and 15 feet long. Mr. Dennison, replacing Mr. Bennetto after the boulder obstructions were encountered, has used a different technique to advance the work.

Dolphin No. 2 - North Anchorage: Boulders were encountered and again the 10 inch bit was used to drill arbitrarily five feet, which apparently passed the boulder obstruction. The 10 inch casing was then driven down, through the boulder to design elevation. Apparently, the casing split the boulder. This was followed by the 8 inch casing down to bedrock. Again, all casings were driven with the MKT No. 6 Hammer. The coring into bedrock is, however, 8 inch diameter, 15 feet long. This work and all subsequent work described here-

in was accomplished by Mr. Dennison of New Jersey Drilling Co. The large drill rig was then moved by an LCM and crane onto Dolphin No. 3.

Dolphin No. 3 - South Anchorage: Boulders were again encountered and again the 10 inch bit was used to drill an arbitrary five feet. The 10 inch casing was then driven through to design elevation, and the 8 inch casing telescoped down to bedrock. The MKT-6 Hammer was used for driving all casings. The coring in bedrock is 8 inch diameter and 15 feet long. The distance from the top of concrete cap to bedrock, measured along the sloped casings, is 129 feet.

Dolphin No. 3 - Center Anchorage: Apparently, boulders were not encountered in this anchorage. The 10 inch casing was simply driven to design elevation, and the 8 inch casing went further down to bedrock, using the MKT-6 Hammer. The coring in bedrock is 8 inch diameter, 15 feet long. The distance from the top of concrete cap to bedrock, measured along the sloped casings, is 137 feet. This is a somewhat surprising differential in rock elevations, compared to the adjacent South Anchorage, described above. It has been speculated that a "rock seam" was encountered.

Dolphin No. 3 - North Anchorage: Boulders were not encountered. The 10 inch casing was driven to design elevation. The 8 inch casing was being driven, with the MKT-6



Hammer, during the site visit. As of 6:30 P.M., Friday, July 25, 1980 the 8 inch pipe casing measured 83 feet in length, along its slope, measured from the top of the concrete cap. Bedrock had not yet been reached.

Dolphin No. 4: No work has yet been accomplished at Dolphin No. 4, where six anchorages are to be installed. It is understood that Mr. Dennison will probably return to the U. S. A. for a week or so, while the equipment is being moved from Dolphin No. 3 onto Dolphin No. 4. It is not expected that boulders will be encountered at Dolphin No. 4, based on probings made by divers, who shoved reinforcing rods 15 feet into the sandy bottom of the harbor and did not encounter boulders. Both drilling rigs will work simultaneously on Dolphin No. 4. The platform arrangement is such that the heavier rig, which had been drilling at Dolphins Nos. 2 and 3, will be used up front to serve as a cantilever weight for the smaller rig, which will extend out over the cap, on a system of beams. The smaller rig will obtain its power from the larger rig. It is understood that the large rig weighs about 16 tons, serving as the counterweight. The small rig will be operating for the first time on this Dolphin No. 4. It is anticipated that the drilling will take about two months for the six holes, because of the need to move around these two rigs from hole to hole, along with their cantilever beams, using the 60 ton DANAC crane mounted on the barge. There will be considerable shift-

ing of dunnage, cantilevers, rigs, etc., which will take considerable time, depending on the availability of the 60 ton crane, when it is not being used for driving of sheet piles.

#### ROCK ANCHORAGE REINFORCEMENT

The Contractor has not yet prefabricated the cages for the rock anchorage reinforcement. This is not, however, a difficult task and can be accomplished relatively quickly, when required.

There were no further discussions during this second visit regarding the staggered weld splices, etc. Apparently, the problems had been resolved during the first visit in April 1980.

The fact that the Contractor is now drilling 8 inch diameter holes into the bedrock simplifies placement of the reinforcement. It will be easier to set the cages into the rock socket and there will be fewer problems of grouting around to ensure bond with the sides of the hole, compared to the original design with a 6 inch diameter hole.

#### ROCK ANCHORAGE CLAIM

On June 26, 1980 DANAC, Inc., submitted a claim in the amount of \$107,995 as estimated extra work to overcome the boulder obstructions, anticipated to be encountered during placement of the rock anchorages at Dolphins Nos. 2 and 3.

During this July 1980 site visit, discussions concerning this matter were held with the Contractor and Captain Weeks. Past schedule and performance data were obtained from Captain Weeks. Based on all of this information, an independent estimate was made, resulting in a value of \$73,130 for the extra work performed. The analysis of this claim was separately prepared and submitted in final form on August 20, 1980.

The major basic difference between the DANAC claim and the estimated value are that the actual time spent, in bypassing the boulder obstructions, was less than DANAC had conservatively estimated. In addition, obstructions were not encountered in all anchorages and also, credit should be given for the time that the idled DANAC foreman could be gainfully employed with other work.

DANAC had given an "estimated" claim, before the actual work was performed. Accordingly, since the site visit was made at a later date, after much of the work was completed, it was possible to evaluate the actual expenses incurred.

#### PILE TIE DOWN AT LOADING PLATFORM

All ten West Batter Piles of the Loading Platform are to be tied down by means of brackets and 1-1/4 inch diameter anchor rods. This will strengthen the Pier, to compensate for the extensive spalling and cracking that had occurred around the batter piles, particularly at the four southerly bents of the Loading Platform.

During this second site visit of July 1980, the Contractor had already chipped out the decking at the four southernmost batter piles of Bents 13 to 16, inclusive. Each opening in the deck surface was about 18 inches wide in a north-south direction, and about 40 inches long in an east-west direction, parallel to the pile cap. The reinforcing steel was exposed in each of the deck openings and the depth to which the concrete had been jackhammered out varied from about 8 inches to 16 inches down. The reinforcing steel was about 7 inches from the top of the slab. It was noted that in many areas the top reinforcement was spliced at this particular area of the pile cap.

The Contractor had already drilled 2 inch diameter holes, parallel to the West batter piles, through which the tension rods would be inserted, connecting the welded bracket on the steel pipe pile to a prefabricated angle plate, bearing on the upper concrete surface, in the chipped out deck.

The Contractor had accomplished the drilling, through the concrete cap, from the bottom up - by setting a template along the pipe pile and drilling up to the deck surface, thereby maintaining alignment with the batter pile.

The steel angle plates, which are to be installed on top, had already been prefabricated in the U. S. A., welded and shipped to the Azores.

The chipping out of the upper deck surface revealed, however, a difficult problem in setting the upper prefabricated angle plates. The angles should be placed below the reinforcement, but because of the splices and stirrups, there is not enough room to slip the angle between the reinforcement, so it could bear on the chipped out concrete beneath. On the other hand, the angle plate could not be placed on top of the reinforcement as it would then extend up above the finished deck surface.

After discussions, it was agreed that each tie down would be individually developed, attempting to slip the angle beneath the reinforcement for proper bearing. Where the spacing is not sufficient to accomplish such placement, it was agreed to cut the reinforcement, install the angle and then butt weld back the reinforcement, along with an additional steel rod for splice. No typical design can be prepared. It is a field condition that has to be solved individually.

The top angle plate will be placed on a layer of grout, for uniform bearing. All of the chipped out concrete will be replaced with epoxy type grout concrete to seal and close the openings.

The anchorage tie downs have to be accomplished before any pressure epoxy grouting of cracks takes place, so as to first "pull" the pier deck slab down, onto firm bearing

on the steel pipe piles, per the Specifications. Later, the pressure grouting will take place - to seal up the cracks and form an integral deck.

The work has to be accomplished before the end of the 100-day Pier shutdown period, as the Pier deck should be put into good condition, before the ships berth again, against the Loading Platform. In a sense, the chipping out of the deck has "weakened" the structure, and therefore, it is necessary for the work to be completed before the ships berth.

All ten of the West Batter Piles are to be tied down. During the visit, the Contractor had chipped out and drilled holes through the pile cap for only the four southernmost batter piles of the Loading Platform. Six more piles are to be chipped and drilled.

The Contractor mentioned that when drilling the holes up through the pile cap, they found that in all four piles (drilled to date) at the east hole, which is towards the breakwater, there was embedded a 1-1/2 inch thick steel plate near the bottom of the pile cap. None of the As Built Construction drawings show this plate, either as a cap on the steel pipe or as a part of the structure. It is believed that these plates are part of tie plate arrangements, used to hold the batter piles in place, during original construction, before the concrete caps were poured. The Contractor exper-

experienced great difficulty in trying to drill up through these plates and finally, developed a "torch arrangement" wherein a hole was burned through the plate, so the drilling could progress upward towards the surface of the Loading Platform deck.

The Contractor planned to complete all of the tie down work within the next week or two.

#### EPOXY PRESSURE GROUT REPAIRS - LOADING PLATFORM

The Contractor has to pressure grout repair the cracked Loading Platform deck slab, particularly the southern half.

This work will be accomplished after the batter pile tie downs are completed.

The epoxy grouting has to be completed before the end of the 100-day Pier shutdown period, so the ships can berth against a structurally monolithic deck slab. The work should be done sufficiently in advance to allow adequate curing time for the epoxy grout.

Procedures were discussed and the Contractor indicated that the epoxy pressure grouting crack repairs would commence around August 25, 1980.

## HARBOR BOTTOM ELEVATIONS

The Contractor had observed during driving of the sheeting for the North Dolphin as well as during the porbings for boulders at the rock anchorages, that the harbor bottom elevations were higher than shown on the Contract drawings. This was particularly noticeable when the sheets were threaded for the North Dolphin and the pile hammer in the leads of the 60 ton crane, cleared the sheeting by only 10 feet. The sheet piles extended upward higher than originally planned.

In discussions at the job site, there were three different harbor bottom elevations that the Contractor was considering. The first elevations were shown on the Army Corps of Engineers drawings, for the original Pier construction. The second elevations were soundings shown on the Contract set of plans for this project, and the third were soundings made by the Contractor.

Discussions were held regarding datum, how the various soundings were made, etc., so as to make certain that all were referred to a constant datum, and that information obtained from a boat, at varying tide elevations, was not being erroneously compared.

In addition, the Contractor was interpreting between elevations shown on the Contract plans and establishing water depths that were different from those actually measured



in the field. Interpretation is a satisfactory procedure to obtain a general idea of water depths, but not sufficiently accurate for the Contractor's purpose.

The Contractor stated that he had found the harbor bottom about 6 to 8 feet higher than shown on the Contract drawing, namely, Sheet No. 3 NAVFAC Drawing 3017682. The Contractor attributed this change to the fact that there had been considerable siltation in the area, and a great deal of sand had been accumulating on the beaches in recent months.

In turn, questions were raised as to whether or not the Contractor's operations had piled up some of the sand. It is understood that when the divers had gone down to inspect the bottom, preparatory to sheet pile driving, or had inspected the sheeting itself, they found no sand accumulated against the sheet piles of the North Dolphin, but they did report that the bottom sloped.

The Contractor also indicated that the additional 6 to 8 feet of sand may account for the hard driving encountered at the North Dolphin. The response to this, however, is that recently deposited sand would be in a loose condition, and the fact that the divers were able to probe with reinforcing rods, 15 feet into the harbor bottom, to see if there were any boulders, verifies the looseness of the upper sand layers.

Accordingly, to resolve this matter, new soundings were made on Friday, July 25, 1980, using a lead line off the

top of the Pier, sounding at the same points as the Contract plan soundings — made in January 1979. Assuming that the deck level (not the curb) is at Elevation +11.0 ft., referring to the Mean Low Water datum, it was found that the harbor bottom has come up about 3 feet during the interval from January 1979 to July 1980. Attached is a sketch showing water depth changes.

Around Dolphin No. 3, the harbor bottom has come up about 10 feet. It was thought this was an error and so the area was remeasured several times for verification. However, since the Contractor is installing rock anchorages at Dolphin No. 3, it is possible that the "moundup" of sand on the bottom could be washout from the casing, plus propellor wash by the tug boat, servicing the rock anchorage drilling.

Although the harbor in the immediate vicinity of the POL Pier has filled, this has not really affected the Contractor's work. It is possible, however, that some obstructions may have been buried by the siltation, only to be encountered later, either during driving of sheeting along the face of the Loading Platform or — future driving at the South Dolphin.

Siltation of the harbor is significant as it is understood there are plans to dredge the entire harbor to a deeper elevation. If the present cost estimates are based on old soundings, the actual dredge quantities will increase be-

cause of the siltation. On this basis, it is advisable for those involved in the overall harbor dredging project to make new soundings, out in the main channel and turning basin area. Hopefully, the POL Pier area may represent a local siltation condition. Otherwise, the cost of dredging will be high.

#### NEW NORTH DOLPHIN

Driving of the new North sheet pile Dolphin was in progress, during the inspection visit. The Contractor was not, however, driving in level stages, but instead, was selectively driving portions of various walls, dependent on the convenient reach of the floating crane and the ease with which the piles were penetrating.

During the first day of the visit, namely, Monday, July 21, 1980, the sheet piles along the North, East and South walls varied from 20 to 40 feet above the deck of the Pier. Whereas, the West wall had not been driven at all. However, after discussion with the Contractor, the flights were being leveled so that on Friday, July 25, 1980, the three walls were more level in that they had to drive about 10 more feet on the North wall to reach design penetration: about 8 feet on the East wall, and about 12 feet on the South wall. In addition, with respect to the West wall, about 60 percent of the North end was threaded, and about 40 percent of the South end was being driven.

It was explained to the Contractor that they were trading expediency for hard driving later, with sheets possibly

out of vertical alignment and interlocks clogged with sand. In response, the Contractor stated that their experience was that initial driving of the corners and of the soldier beam piles "anchored" the sheets, so that the intervening sheets drove easier.

No conclusion could be reached from these discussions as there is no practical way of comparing the actual driving condition with what would have occurred if they had driven in level and uniform flights. The Contractor did state that along the East wall there was considerable binding. They had to lift up some of the sheets and "loosen up" a length of wall and then redrive to overcome this "obstruction."

They have also encountered hard driving when two sheets are level at the bottom and one sheet is driven past another. This is probably due to the tip interlock bent in, resisting the driving of one sheet past another. In addition, mention was made that they find harder driving when one sheet passes the welded splice of another sheet. This would be caused by a slightly misaligned butt weld at the splice.

The main difficulty they encountered so far in driving the North Dolphin was on the South wall, where one sheet required about 100 blows to advance 3/4 of an inch. Finally, they pulled up the sheet and moved some of the adjacent sheets and then redrove with reasonable ease.

The Contractor mentioned that they were encountering "hard spots" and cited the experience other Contractors had with driving the pipe piles of the original POL Pier. However, this is not an applicable experience as the pipe piles are a different section - some vertical, some battered, and no general comment can be made about such experience. However, the fact is that experience with driving the pipe casings for the rock anchorages indicates that even with the light MKT-6 hammer, having an energy of only 2,500 ft.-lb., the inclined pipe casing of 10 inch diameter drove reasonably well. In addition, the fact that the divers could push reinforcing rods, down 15 feet into the harbor bottom, indicates that the soil densities are not as compact as the Contractor believes. Instead, hard driving is due to interlock binding.

Nevertheless, as a means of coordination, a system was set up wherein the Contractor numbered all of the sheet piles of the two Dolphin cells, so that if any problems arise in the future, telephone discussions could be held regarding a particular situation.

In accordance with the Specifications, divers went down initially to examine the harbor bottom to remove obstructions. Apparently, a great deal of cleaning up was required at the North Dolphin. They found waterlogged timbers from the old fendering system lying on the bottom and in particular, there were considerable quantities of entangled wire

rope and cables. It is possible that some of these items lie buried and cause some of the pile driving resistance.

The template arrangement, tied back to the Loading Platform, seemed to work very well and give adequate support to the sheet piles during driving. It is understood, however, that when there is a long period swell, the walls of the cell tend to move, rotate on the interlock, and there is considerable chafing and the continuous sound of steel rubbing in the interlocks. This will cease when the cell is filled with crushed stone.

Problems were encountered with welding of the sheet piles in that the interlocks did not match well. Some of the piles were slightly twisted. This required retwisting of the piles on the welding bed, to join the interlocks in straight alignment. Once this was done, the piles were straight, but it does mean there is residual twist in some of the spliced sheet piles.

Considerable discussion ensued concerning "end bearing" resistance. The Contractor stated that since good resistance was being obtained, it meant good fixity for the sheet piles. This is not correct as the driving resistance is primarily interlock friction or twist of the piles at the bottom, and these are not bearing piles, but require a minimum penetration to develop the passive toe resistance to

"kick out" - when the cell is filled with the crushed stone. This was discussed and explained to all concerned.

It was noted that due to handling, some of the piles were badly scraped and epoxy paint retouching was needed. Accordingly, the Contractor started this operation as the sheets were being driven. He had an epoxy paint, supposedly suitable for both above and underwater use, for touch up of the steel sheet piling. It is manufactured by American Metaseal Company, 509 Washington Avenue, Carlstadt, New Jersey 07072, telephone: (201) 933-1720.

In conclusion, it is believed that the questions concerning sheet pile driving were generally resolved during the visit. Except for the few "hard driving" areas encountered, which were subsequently overcome, overall there does not seem to be any serious problems, but this will have to wait for confirmation, as the sheet pile driving continues - about 10 more feet, and after the divers' inspection is made, after filling of the cells with crushed stone. However, at this point, problems are not expected.

#### NEW SOUTH DOLPHIN

During the July 1980 site visit, the Contractor had commenced drilling holes in the extreme south pile cap beam of the loading platform, for the purpose of anchoring the

template, for subsequent driving of the new South Dolphin. Other than this preparatory work, the South Dolphin construction had not yet commenced.

Based on the overall scheduling and the fact that the Contractor has only one pile driver and one crane capable of reaching and driving the sheet piles for the dolphin, it is apparent that when the 100-day Pier shutdown period expires, namely on September 19, 1980, the South Dolphin will not be completed. Most probably, the Contractor will be in the midst of driving sheet piles. At that time, the barge-mounted crane will have to be moved away, so ships can berth and supply the base with fuel. All construction work will have to cease.

In this connection, DANAC stated that they are considering placing their 60-ton crane on top of the Loading Platform, for the final driving of the new South Dolphin, after the 100-day period. The reasoning behind this is to bring the crane out of the water, to overcome adverse winter weather conditions.

Such a scheme requires advance planning to distribute the loads so as not to overload the existing Loading Platform. A procedure has to be established for the crane to be lifted onto the Loading Platform. It is believed that the existing Army cranes do not have adequate capacity. Accordingly, placing the 60 ton crane on top of the Loading Platform could only be accomplished by using a ship's crane. This means that some



form of fendering, etc., will be required alongside the existing Pier and then arrangements must be made with a ship coming into the harbor, having adequate capacity to lift the 60-ton crane onto the south end of the Loading Platform, on dunnage to distribute the loads.

All of this can be done, and in fact, the original idea behind the entire design of the dolphins was that they would be driven from the Loading Platform. However, it requires considerable advance planning to accomplish such a transfer. There will be shutdowns during ship berthings. The piles of the Loading Platform must not be overloaded under the weight of the crane, plus impact forces from a berthing ship.

Finally, upon completion of the sheet pile driving, there then remains the logistics of removing the crane from the Loading Platform, without overloading other portions of the Pier, or the access roadway.

No particular conclusions were arrived at during these discussions with the Contractor, as they had not positively formulated their plans and of course, there still was the uncertainty as to the stage of construction, when the 100-day period expires. However, if placing the 60 ton crane on the Loading Platform is proposed by the Contractor, the procedure will have to be reviewed, once the Contractor submits his detailed plan to complete the construction of the New South Dolphin.

#### CRUSHED QUARRY STONE FILL

The Contractor stated that about 80 percent of the crushed stone, required to fill the new North and South Dolphins, was on the job. The material was stockpiled immediately east of the DANAC warehouse, at the job site. No measurements were made, but offhand it seemed that the stockpiled stone was less than 80 percent. However, it is the Contractor's responsibility to obtain any additional materials, if required.

The stone is very good in that it is hard, sharp, durable and sized from, say, 1 inch to 3 inch. It is well graded and will certainly develop good internal friction and shear resistance. Furthermore, it is sufficiently large size and can arch should there be an interlock rip.

The Contractor stated that they had made a Contract with the quarry operators, prior to the January 1980 earthquake, and obtained a commitment at a rather reasonable price. Since the earthquake, because of the reconstruction work and the need for crushed stone for concrete, the prices have increased considerably. On this basis, the quarry operator was not supplying DANAC with stone at a reasonable rate. However, these difficulties have now been resolved and DANAC indicated there would be no problem to obtain the remaining stone required to fill the two new dolphins.

## FENDERING FOR LOADING PLATFORM

The sheet piles, which will serve as fendering for the Loading Platform, are on the job and will be driven after the North Dolphin cell is completed. The overall intent is to make certain that before the 100-day Pier shutdown period expires, the North Dolphin and the Loading Platform fendering are complete and capable of receiving a ship.

Driving of the fendering for the Loading Platform will be interrupted. The work will first commence at the north end; then the crane will float over to install the template for the South Dolphin. Next, install tie rods at the North Dolphin and, finally, complete the south half of the Loading Platform fendering. This sequence should work out without problems.

The Contract drawings show the top wale of the fendering system at Elevation + 9 ft., but this is too low in terms of interfering with the reinforcing steel in the coping beam of the Loading Platform. Consequently, it was agreed to move the waler up 1 ft. to Elevation + 10 ft. DANAC prepared a sketch and the other items will be adjusted for this 1 ft. elevation change. The sheeting remains the same, in penetration and length.

#### APPROACHWAY CONCRETE SPALLING

On Friday, July 25, 1980, an inspection was made of the underside of the Approachway, from shore to the Loading Platform, to observe the corrective work that had been accomplished and to inspect new spalling that had developed since the original inspection of January 1979. The reference Contract drawing for the inspection is Sheet No. 12, or NAVFAC Drawing 3017691. In general, additional spalling has occurred and should be repaired, as a change order.

Span No. 1 - The Contract drawings required repair of a spalled area at the north end, near the bridge abutment. Such repairs had already been made and otherwise Span No. 1 is satisfactory in that there is no evidence of new spalling.

Span No. 2 - There is a crack at the north end of this span, on the west side, which was to be pressure grouted to repair the fascia beam. However, this crack has now opened up considerably and to the extent where the entire side of the concrete for, say, a distance of about 8 feet is ready to fall out. It is no longer a pressure grouting job. Instead, this loose concrete should be jack-hammered out and the entire area epoxy patched.

Dolphin No. 1 - This existing steel sheet pile cell dolphin was in excellent condition when originally examined

in January 1979. The sheeting was painted and the concrete was without spalls. However, in the interim, the painting has failed and considerable corrosion is occurring at the top, where the sheeting penetrates into the concrete cap above. The corrosion has caused expansion and the concrete is spalling and falling out. Repairs are needed, at intermittent areas around the perimeter of this cell. The work should consist of chipping out the loose, spalling concrete, sandblasting or vigorously wire-brushing away the corrosion of the sheet piling, repairing the concrete with epoxy patches and repainting the steel sheeting. This is all additional work to the Contract.

Span No. 3 - The Contract drawings show the north end to be repaired, as a major spalled area. Such repairs have been accomplished.

Span No. 3 - The south end of this span has developed some new spalled areas - rather small, but covering the full width of the roadway, consisting of a strip about, say, 3 ft. wide, in a north/south direction. The concrete has fallen away, exposing corroded reinforcing steel beneath. This area requires repair, similar to that which has been accomplished at the north end of Span No. 3.

Span No. 4 - The north end of this span, particularly on the east side, has developed new spalled areas which were not present in January 1979. Repair work is necessary, as an addition to the Contract.

Support 4-5 - The concrete cap, between Span No. 4 and Span No. 5 and, most particularly on the No. 4 side of the expansion joint, shows considerable spalling of concrete, with exposure of reinforcing steel. These spalled areas occur at the expansion joints, at both sides, and additional epoxy patches are required to correct this condition. It is a matter of sand-blasting the surface and placing a troweled epoxy concrete surfacing.

Span No. 5 - The center point of Span No. 5 has developed a new spalled area, extending about the full width of the roadway, in a strip about 3 feet wide in a north/south direction. The concrete has spalled off, showing exposed, corroded reinforcing steel. This is an additional area that requires epoxy repair.

Span No. 5 - The south end has developed a larger spalled area, than originally shown on the Contract drawings. The spalled area has now extended the full width of the roadway, in a 3 feet wide strip, in a north/south direction. The spalled concrete has fallen off, exposing corroded reinforcing steel. Again, this is additional area to be epoxy patched.

In conclusion, additional work is required by the Contractor to repair additional spalled areas. This could be accomplished as a change order, but it is work which should be done, while the Contractor is mobilized on the job.

## CONTRACTOR'S CLAIMS

Before the second site visit of July 1980, the Contractor had submitted only one claim and that was for the estimated work involved in driving through the boulder obstructions, anticipated at Dolphins Nos. 2 and 3, for the rock anchorages.

The Contractor's claim for the anticipated work was \$107,995, but, after review, it is estimated that the amount should be \$73,130. This is discussed previously in this report and is the subject of a separate memorandum, submitted August 20, 1980.

During the one week visit, after observing the work, and having discussions with the Contractor, it is believed that additional claims will be forthcoming, as follows:

1. The delay caused by the Army not being able to unload the 60-ton DANAC crane, when it arrived in the harbor. This is mitigated, it is believed, by the fact that the Contractor's barge was not ready to receive the crane.
2. The Army TTU unit has placed a limitation of 7,500 lb. maximum lift on the Army crane, mounted in the LCM. This is probably mitigated, to some extent, by the fact that the Contractor would have had to stabilize the LCM with outriggers, etc. to accommodate heavier loads, particularly if the crane was to revolve.

3. Additional spalled concrete repairs beneath the Approachway. This is a valid claim. It is deterioration that has occurred since January 1979 inspection. The Contractor should be authorized to do the work, for a reasonable price.

It is believed that the above three claims will be made by the Contractor, based on comments, during discussions.

Although DANAC has developed a "local reputation" for submitting claims, it is believed that comments they made with respect to hard driving at the North Dolphin or the decreased water depths, due to harbor bottom siltation, will not materialize as claims for extra payment.

A potential claim that requires careful recording is the possibility that DANAC may attribute their non-completion of critical items, within the 100-day Pier shutdown period, to the Government and then put in a claim for added costs for completing the job after the 100-day period. Although the Specifications cover work to be done after the 100-day shutdown period, it is possible that DANAC, based on their previous comments, about delayed deliveries from Bayonne, N. J., etc., may claim an overall, cumulative delay caused by the Government. No comment was made by DANAC personnel concerning this matter, but there is an implied inference of such a possibility. Accordingly, factual documentation should be assembled, while the matter is fresh in everyone's mind. This is particularly important if there is to be a change in the Resident Military Engineering personnel, in charge of inspection.



NAVY RESIDENT OFFICER

It is understood that prior to the site visit of July 1980, personnel from the U. S. Navy had visited the Azores for the purpose of becoming acquainted with the various projects, so as to later replace the Army Corps of Engineers as Resident Inspectors.

In this connection, if Captain Weeks of the U. S. Army Corps of Engineers is assigned new duty, before the project is completed, it would be advantageous to receive any claims while he is still on the job. Also, if possible, an overlapping period should be scheduled for the Navy personnel - to familiarize themselves with the project under Captain Weeks direction. This continuity is desirable, with the Air Force Base Civil Engineering Office, serving as liaison.

## SUMMARY MEETING

On Thursday, July 24, 1980, a Summary Meeting was held with various interested personnel for the purpose of reviewing the entire project. Present at this meeting were Col. Lambert, Lt. Col. Brooks, Major Jardine, Captain Weeks, Lt. Cmdr. Rainey, Sgt. Collins, Dr. Ling, Dr. Chern, and S. M. Olko.

In a general sense, the various items discussed in this report were reviewed at this meeting, but not in the same detail.

The most important point reviewed at the meeting was completion of the critical work items, within the 100-day Pier shutdown period. It was agreed that the \$115 per day penalty was insufficient to compel the Contractor to double up on equipment or do other things necessary to complete the work. It was also concluded that with the present equipment, rate of progress, making allowances for weather, etc., the critical items would not be completed within the 100-day shutdown period, namely, the driving of the South Dolphin. Also, it would not be possible to extend the 100-day completion date beyond September 19, 1980, because the Base would be too low on fuel. Accordingly, the net conclusion was that pressure should be applied on the Contractor to accomplish as much as possible, within the time available, and that provisions should be made to receive the ships, without damaging the partially completed facilities.

The discussions also considered means to speed up the work with, for example, additional cranes, or using the Army cranes working simultaneously off the top of the existing Pier, working double shifts, etc. All of these matters were subsequently discussed with the Contractor, but to no positive conclusion that would guarantee results.

It must be realized that the Contractor does not pay liquidated damages for critical item delays, after September 19, 1980, namely the 100-day shutdown period. Instead, the payment of liquidated damages occurs only after the end of the entire Contract, which is October 7, 1980.

It was generally agreed at this meeting that the concentration of effort would be on making certain that the Contractor's work is in such a condition that a ship can berth on September 19, 1980. It is believed that this will not be difficult to accomplish. The North Dolphin should be filled with crushed stone and the sea cushion fendering installed. The Loading Platform should have its sheet pile fendering installed, with the sea cushion fendering. Consequently, this arrangement would breast out the vessels so they would not bear against the uncompleted South Dolphin. Naturally, berthing will have to be done carefully, selecting a calm day for the initial tieup, utilizing the tugs to maximum extent. Accordingly, with some planning, careful seamanship, selection of weather, there shouldn't be any problem in berthing the ship and unloading fuel for the depleted storage tanks.

The meeting concluded in that the Contractor was to be put on written notice, regarding the 100-day Pier shutdown limitation, and requested to submit a detailed schedule of future work and operations, to be accomplished within the remaining days of the 100-day period. This schedule would be reviewed to make certain that the project is in condition to receive the first ship on September 19, 1980.

During this meeting, a Telex was received from the MAC headquarters at Chanute Air Force Base, Illinois, requesting a weekly report on job progress, and comparisons with the Contractor's schedule. The Telex emphasized the need to complete the work on schedule.

#### FUTURE INSPECTION VISITS

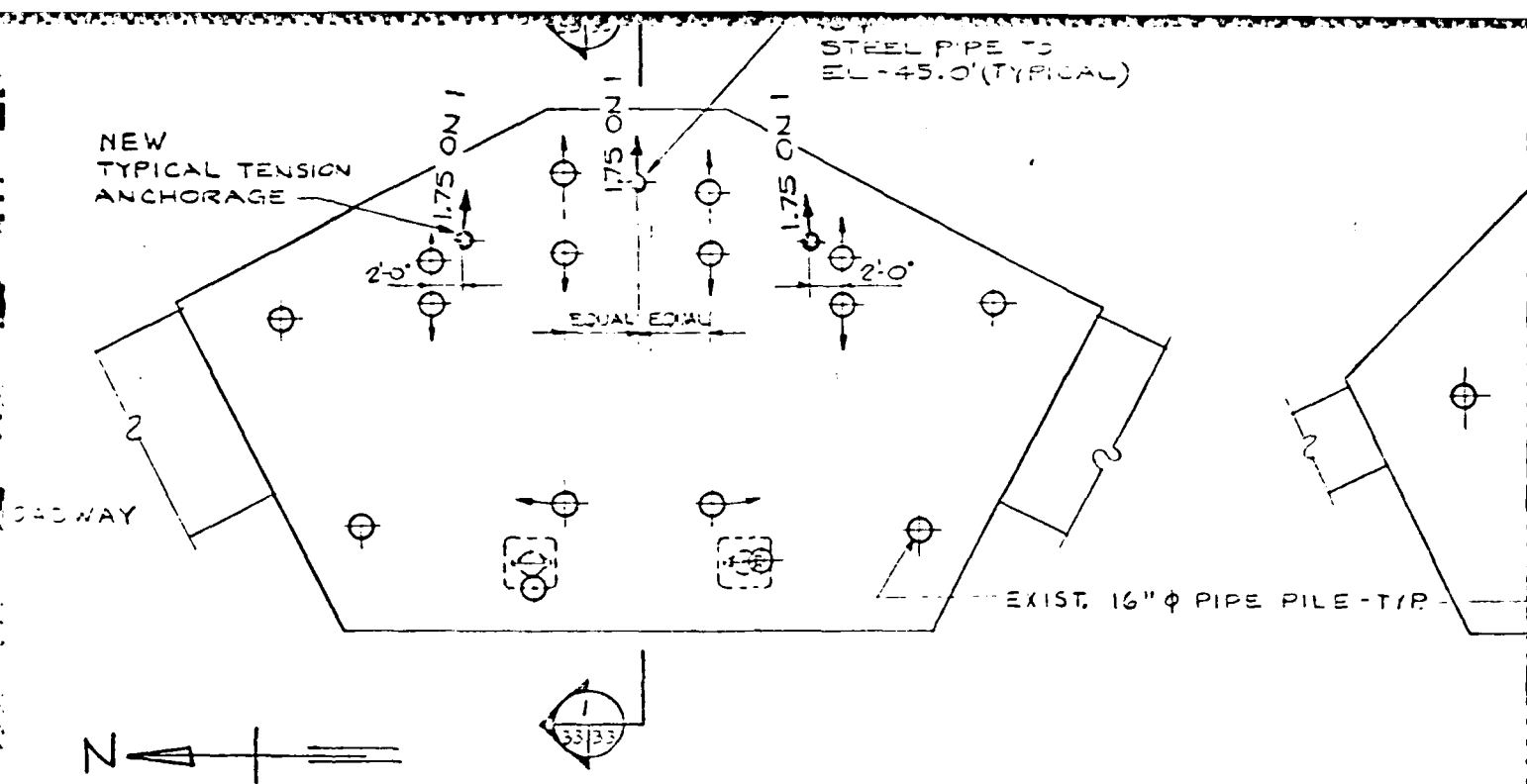
A matter to be resolved is future inspection visits by S. M. Olko. According to the basic Contract, one more visit is to be made, to observe the epoxy pressure grouting of the crack repairs at the south end of the Loading Platform. Based on the Contractor's estimate, it seems that such work will commence around August 25, 1980. This, however, will have to be verified, as there could be considerable slippage in this schedule.

In view of the progress of the work to date and the fact that the critical items will not be completed before expiration of the 100-day Pier shutdown, plus the fact that there may be a change in command, it is believed that a more realistic time for the third visit would be at the end of the 100-day period, to review the entire situation, ship berthing and assist in liaison between the Army and Navy, explaining the project and overall intent of the Drawings and Specifications. This third inspection would be accomplished towards the end of September 1980.

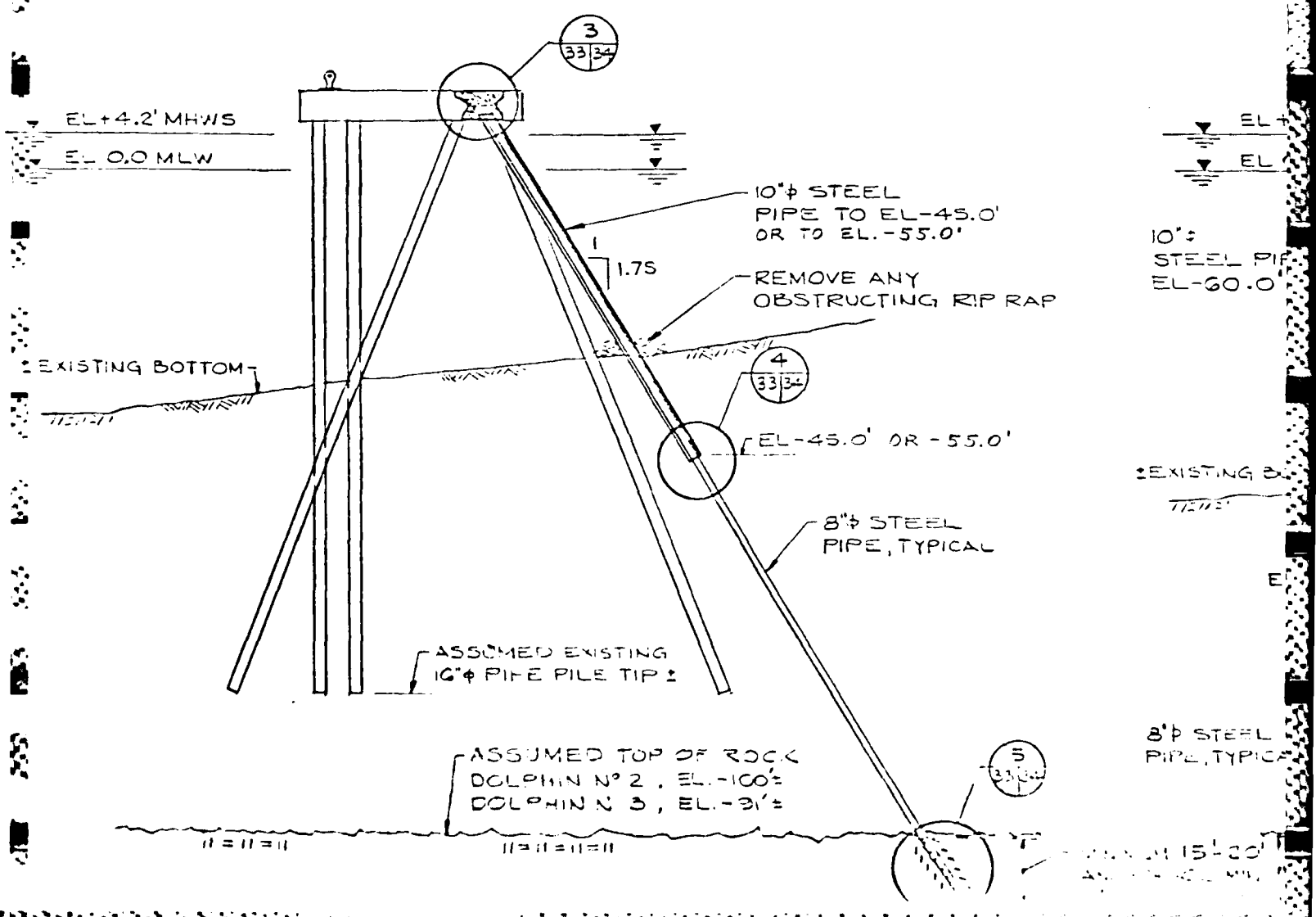
Depending on the progress made by the Contractor and the status of the work, it is conceivable that a non-scheduled fourth inspection may be required. This can be resolved at a later date, depending on how the job progresses.

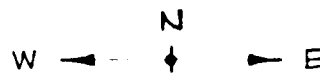
  
S. M. Olko

SMO/rr/er



PLAN DOLPHIN N° 2





BENTS 1 TO 5 AND 12 TO 16  
POCKET IN CONCRETE DECK  
FOR ANCHORAGE TIE DOWN,  
GROUT AND PATCH AFTER TENSIONING PILE.

EXISTING REINFORCING STEEL  
TO REMAIN INTACT

BENTS 12 TO 16  
EXISTING VOID  
OVER PILE

EXISTING  
REINFORCING

1/4"  $\phi$  - THREADED  
ANCHOR ROD  
(TYPICAL)  
(2 PER PILE)

FABRICATED ANGLE PLATE  
FOR ANCHORAGE TIE DOWN

LEVEL SURFACE  
1" GROUT (TYPICAL)

BENTS 12 TO 16  
CHIP OUT POCKET FOR  
ACCESS TO VOID ABOVE PILE  
FILL VOID AND POCKET AFTER  
PILE TIE DOWN IS COMPLETED

2"  $\phi$  DRILLED HOLE, GROUT  
AFTER TENSIONING PILE

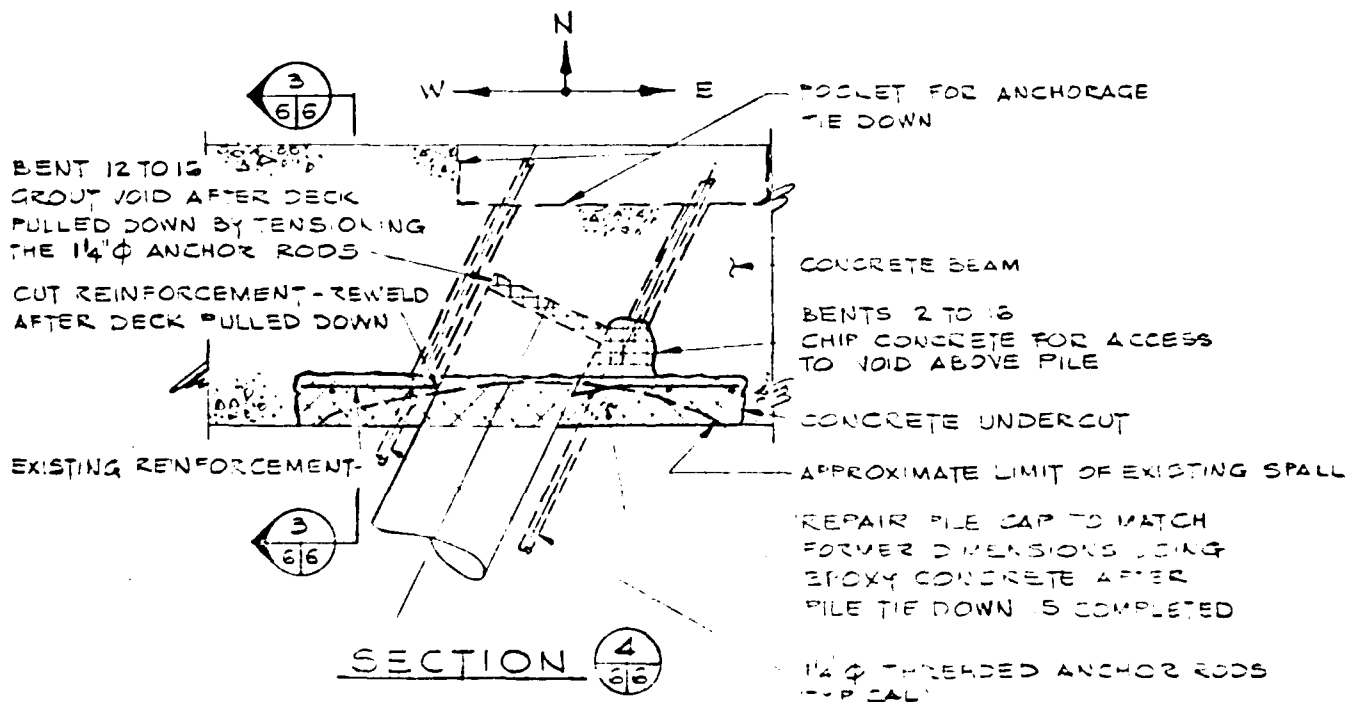
3/4" THICK STEEL PLATE -  
BRACKET WELDED TO STEEL  
BATTER PILE (TYPICAL)

SECTION 2

R. PILE TIE-DOWN

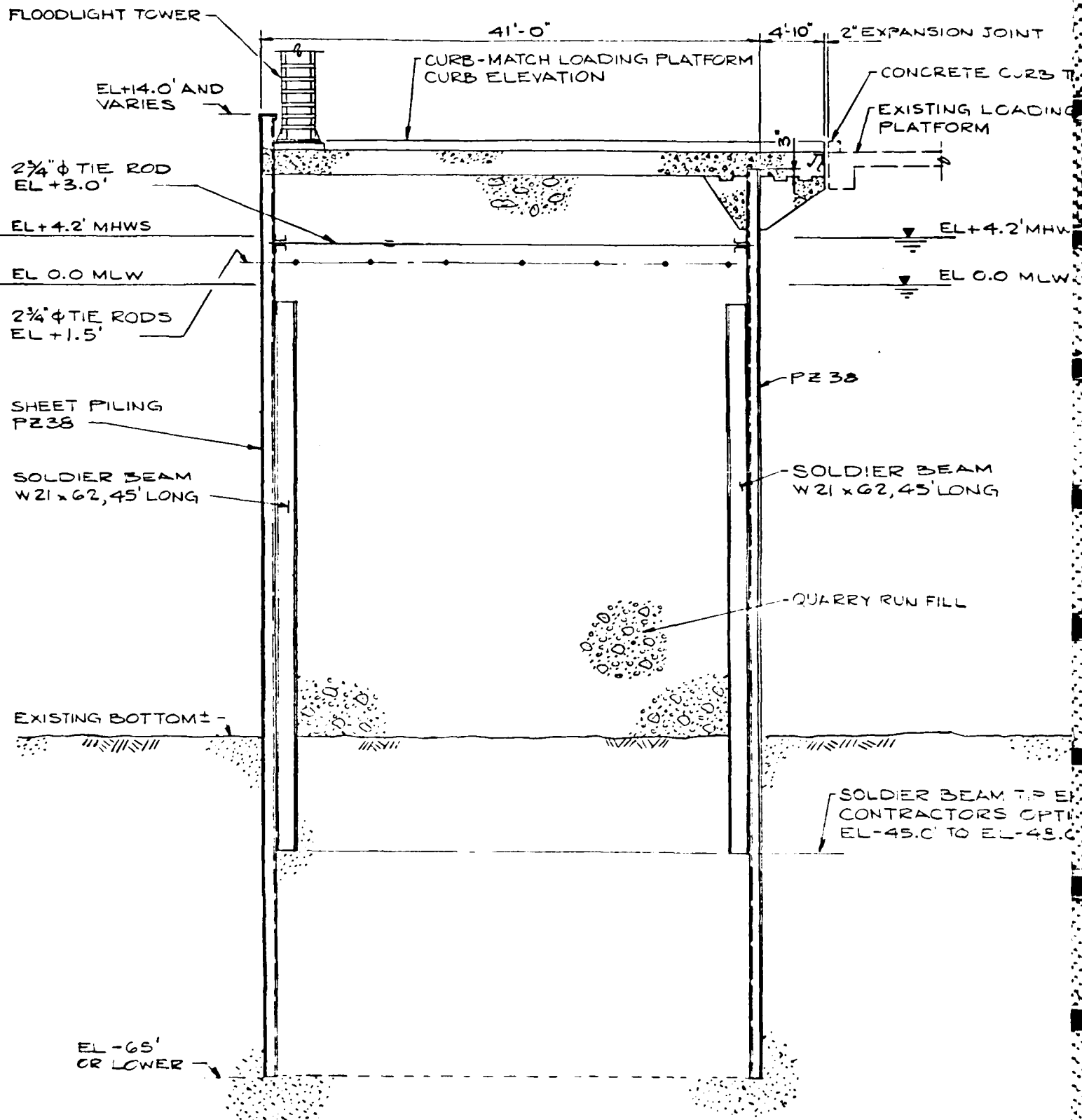
1 TO 5 AND 12 TO 16 INCLUSIVE

1" = 1'-0"

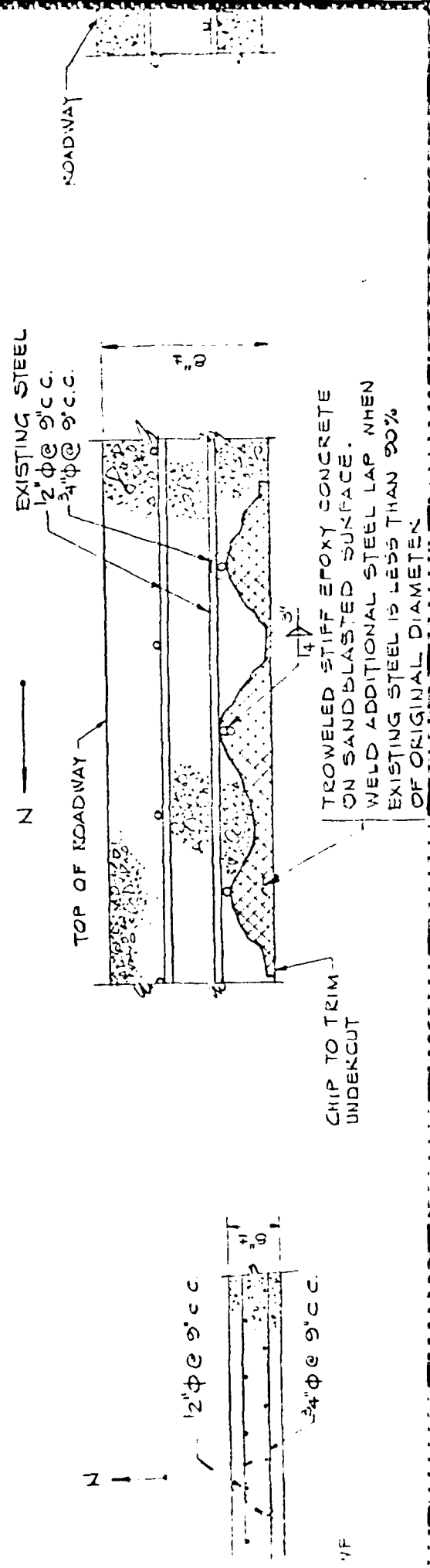
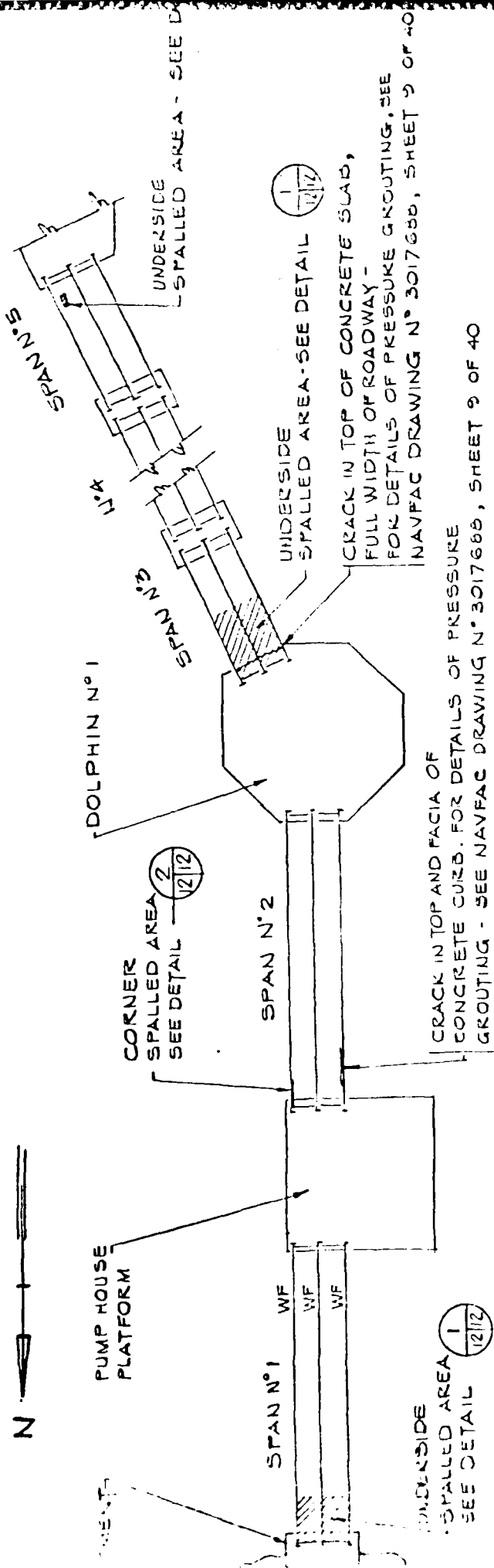


SECTION 4

RS AT WEST BATTER PILES







END

DTIC

7-86